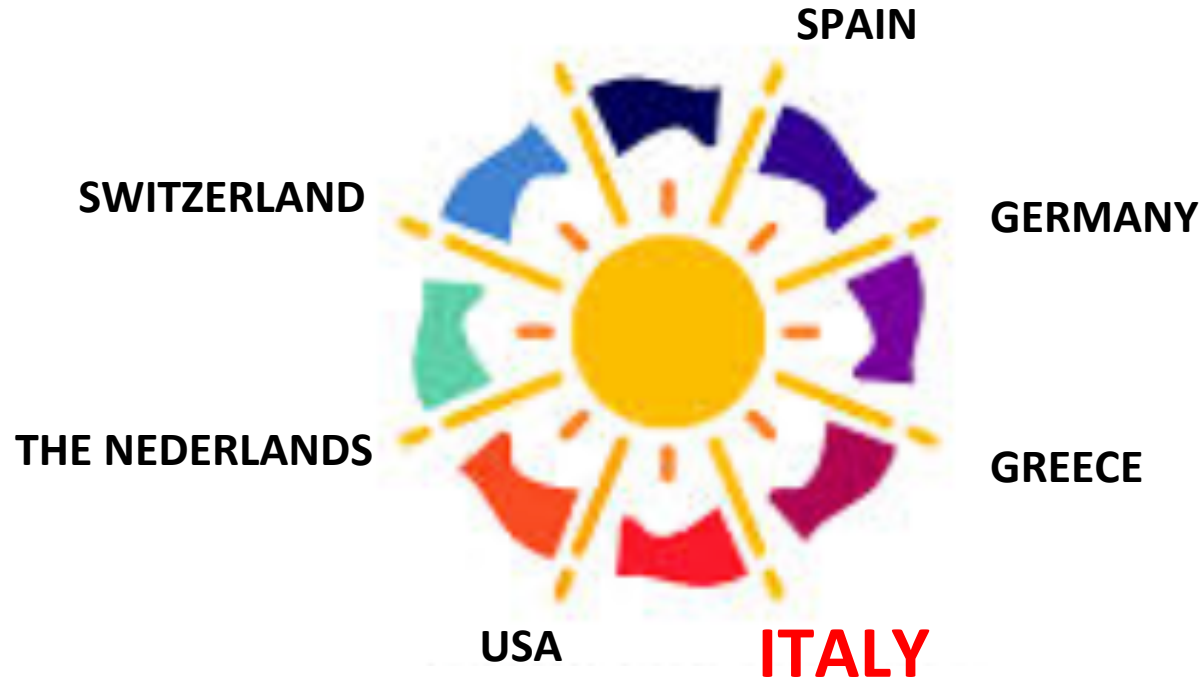
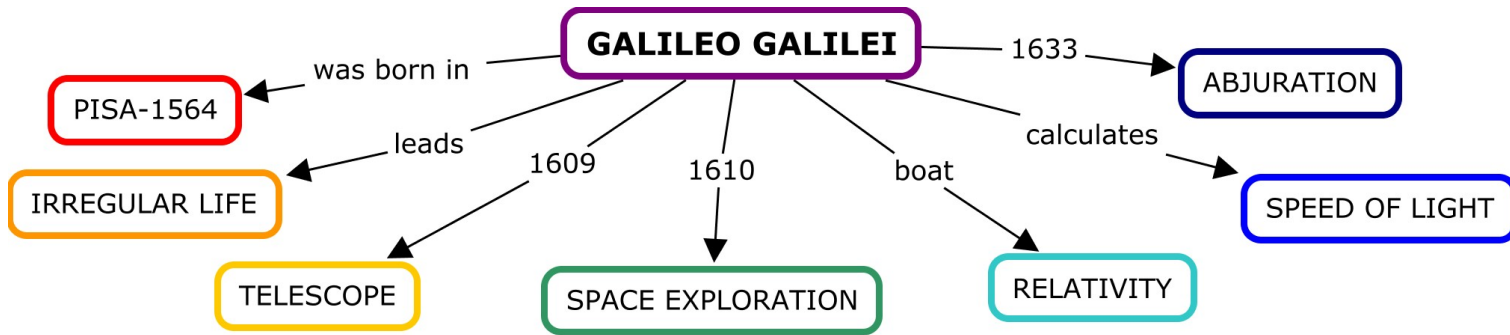


LICEO CLASSICO SCIENTIFICO "DON CARLO LA MURA"

IYL 2015



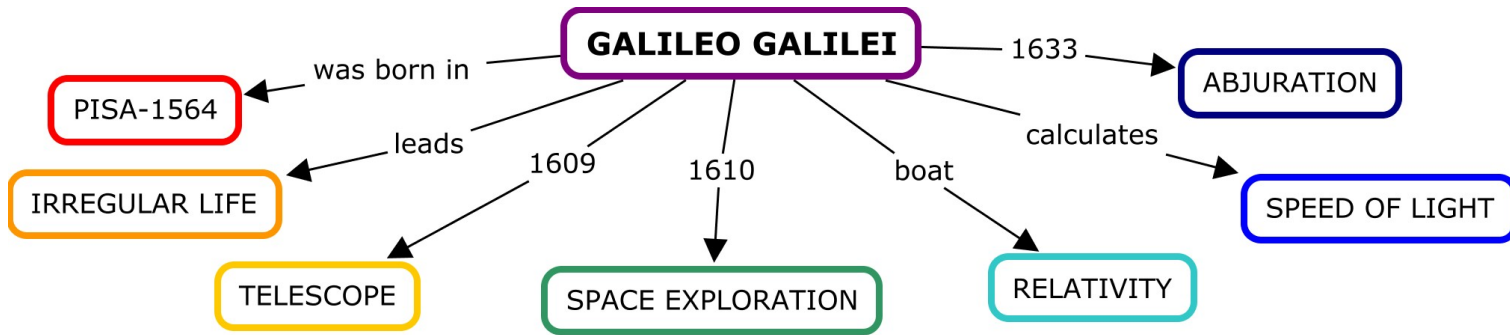
New Light with Old Ideas



- Impetuous man and bad student
- He drops out the medicine faculty after two-three years and studies geometry of ancients on his own: Euclid, Archimedes, etc.
- At the age of 23 he becomes Professor of mathematics at Padova University
- He loves fun and goes often to the taverns and places of pleasure
- He has two illegitimate daughters who become nuns
- He doesn't go regularly to the church, doesn't confess and he makes up the horoscopes for payment!!



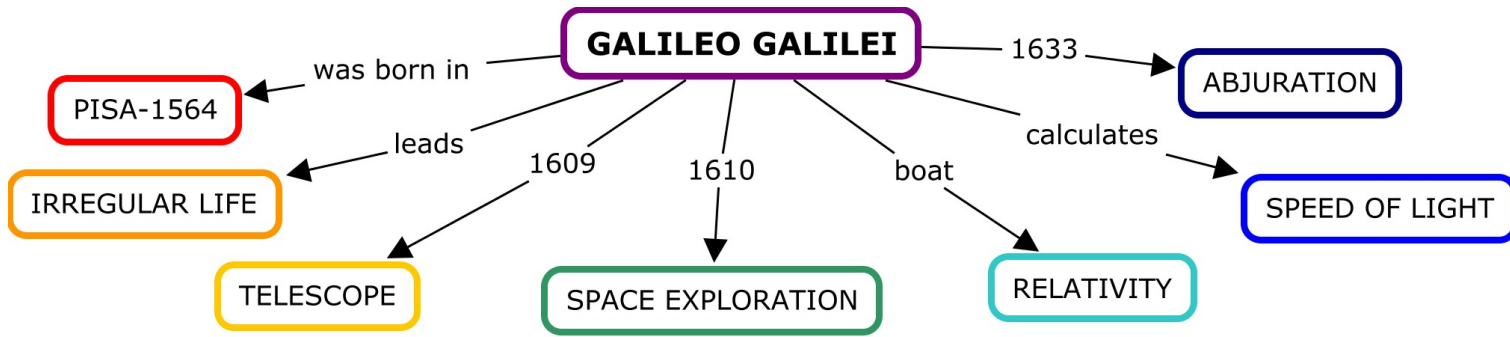
Engraved portrait



TELESCOPE 1609

- He turns what in Holland was a toy into a scientific instrument and he realizes its outstanding importance
- After an initial model, he manages to improve it
- He gets a great clarity of the images thanks to carefulness in the lens finishing, a perfect centering and an exact distance

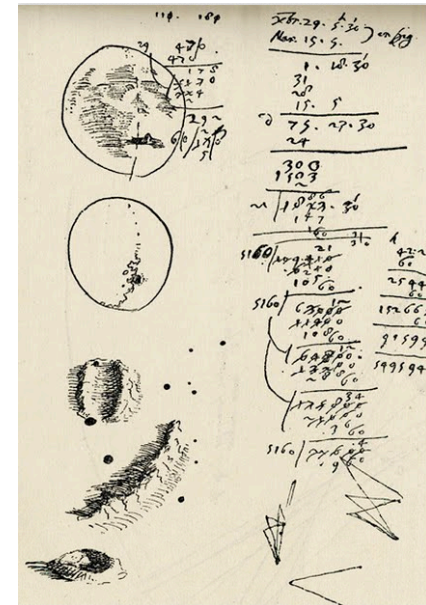


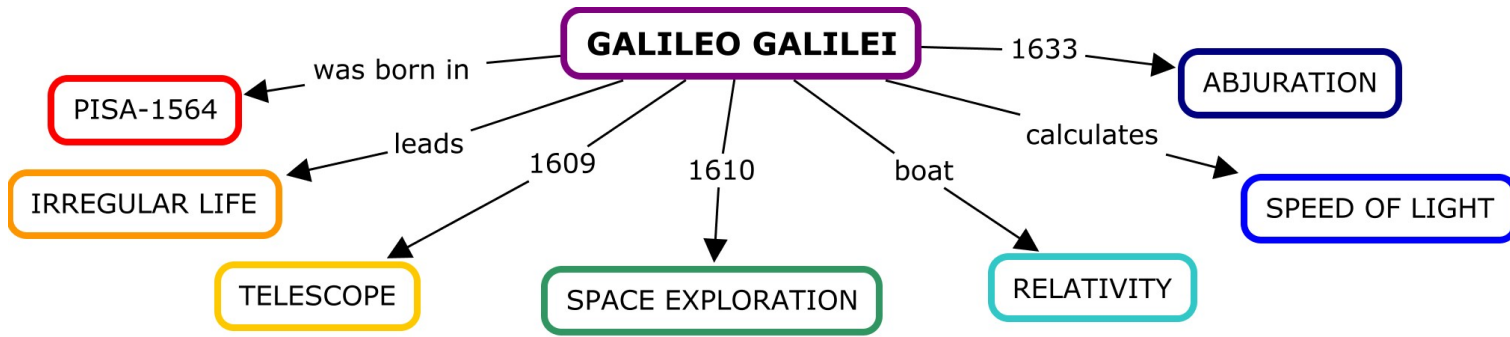


TELESCOPE: SPACE EXPLORATION

The Moon:

- Different from the other stars, with mountains and valleys opposing the Aristotelic theory.
- Orbiting around the Earth
- So the Earth is able to orbit around its centre, having the moon's same composition
- Production of six watercolors of the Moon in October 1609

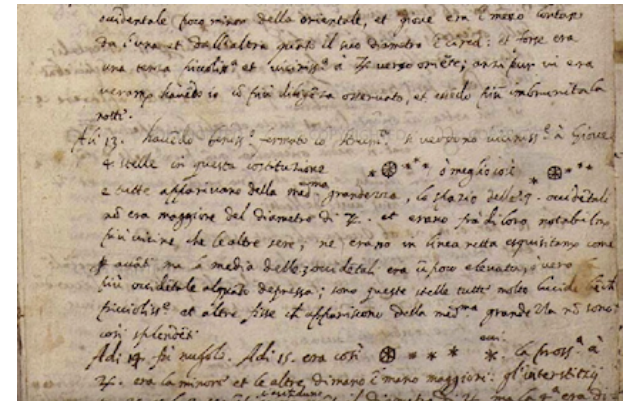




TELESCOPE: SPACE EXPLORATION

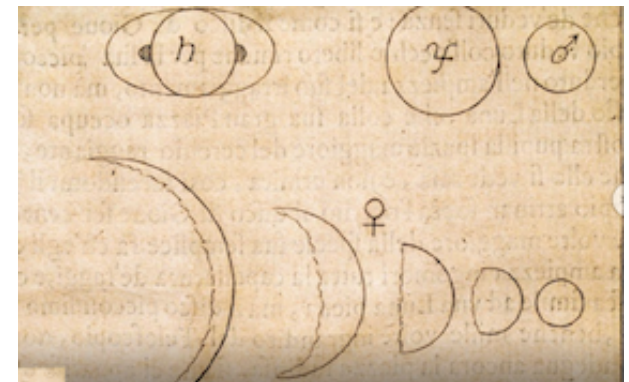
Medicean stars

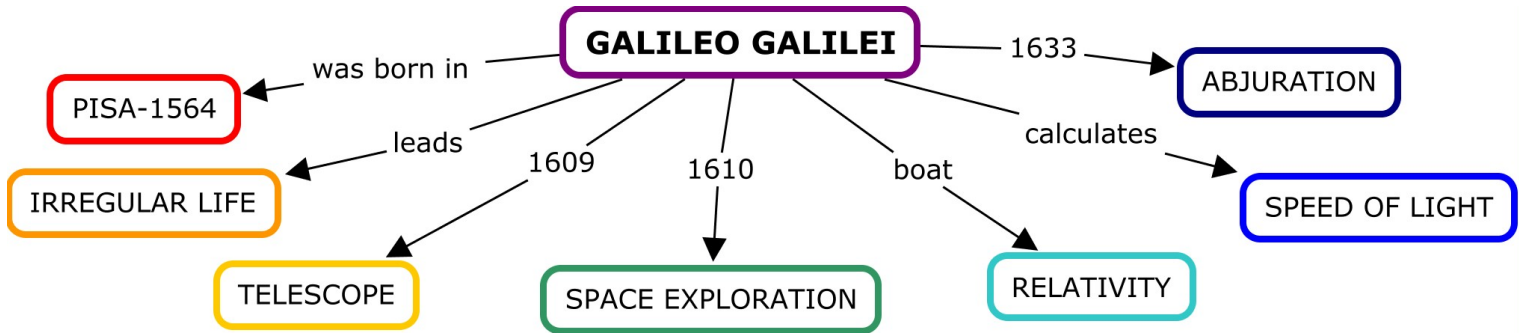
- On the 7th January 1610, at one a.m., three little stars arranged in a line parallel to the ecliptic, two in the east and one in the west according to the scheme: * * O *.
- On the 8th January their position is different and all the three stars are arranged in the west: O * * *.



Venus and Mercury's moon phases:

- They're similar to the Moon phases until the full lighting of the disco. They're evidence to support the Copernican theory.

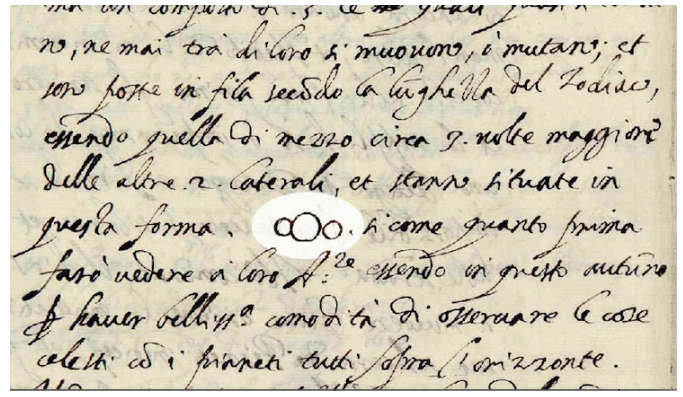
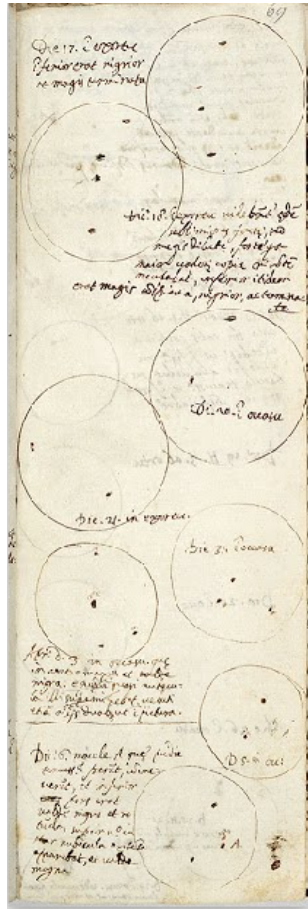




Sunspots

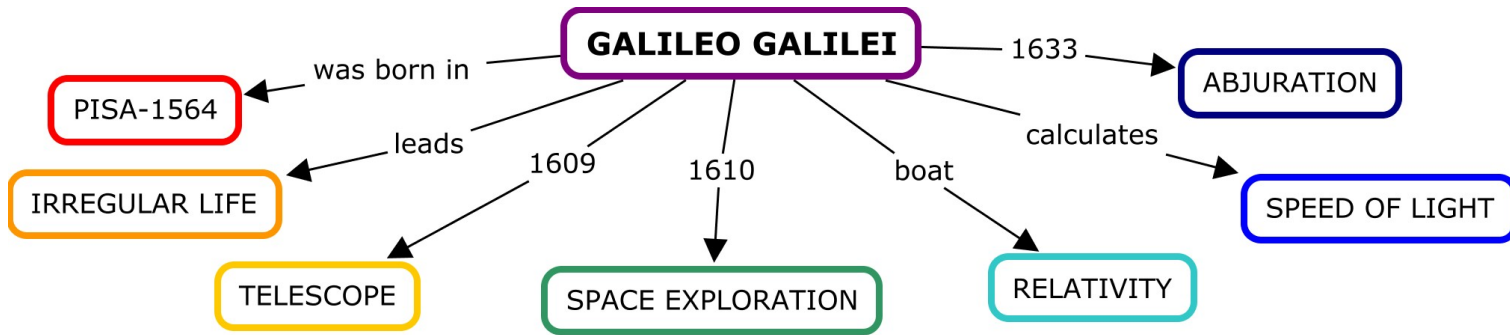
- A further discovery to support the heliocentrism and the rotation movement of the Sun around his own axis

The Pleiades star cluster (the seven sisters)



The star of Saturn is [...] a set of three[...] arranged in a row along the zodiac, the middle one being three times larger than the lateral ones, and they are situated in this form: oOo.

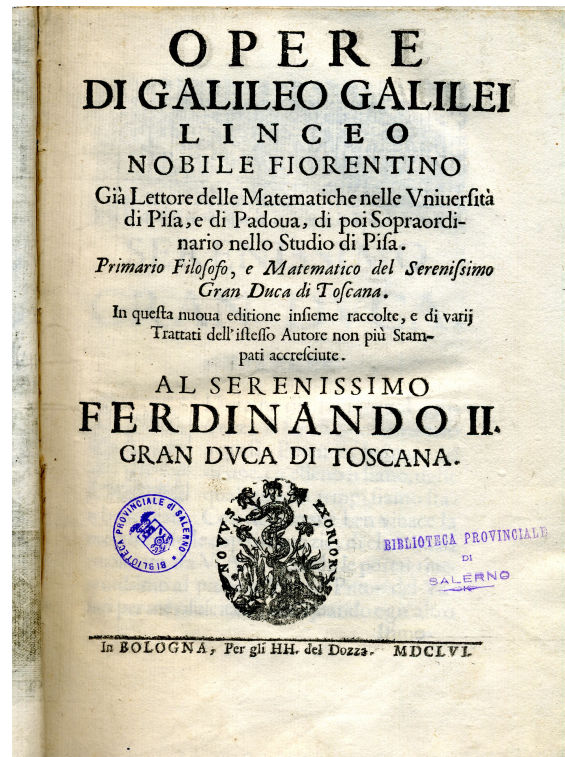
“Endlessly I give thanks to God for allowing me to be the revealer of marvels kept hidden in obscurity for all previous centuries”.



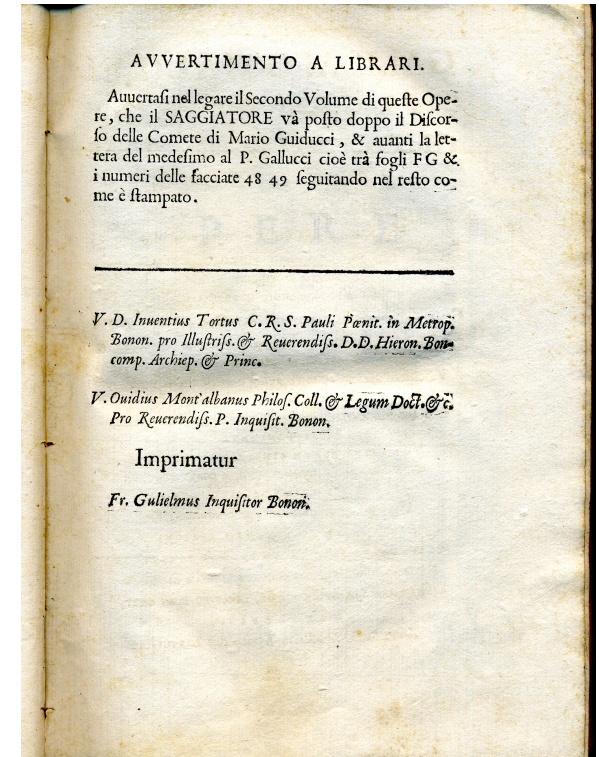
This work is collected in the Provincial Library of Salerno



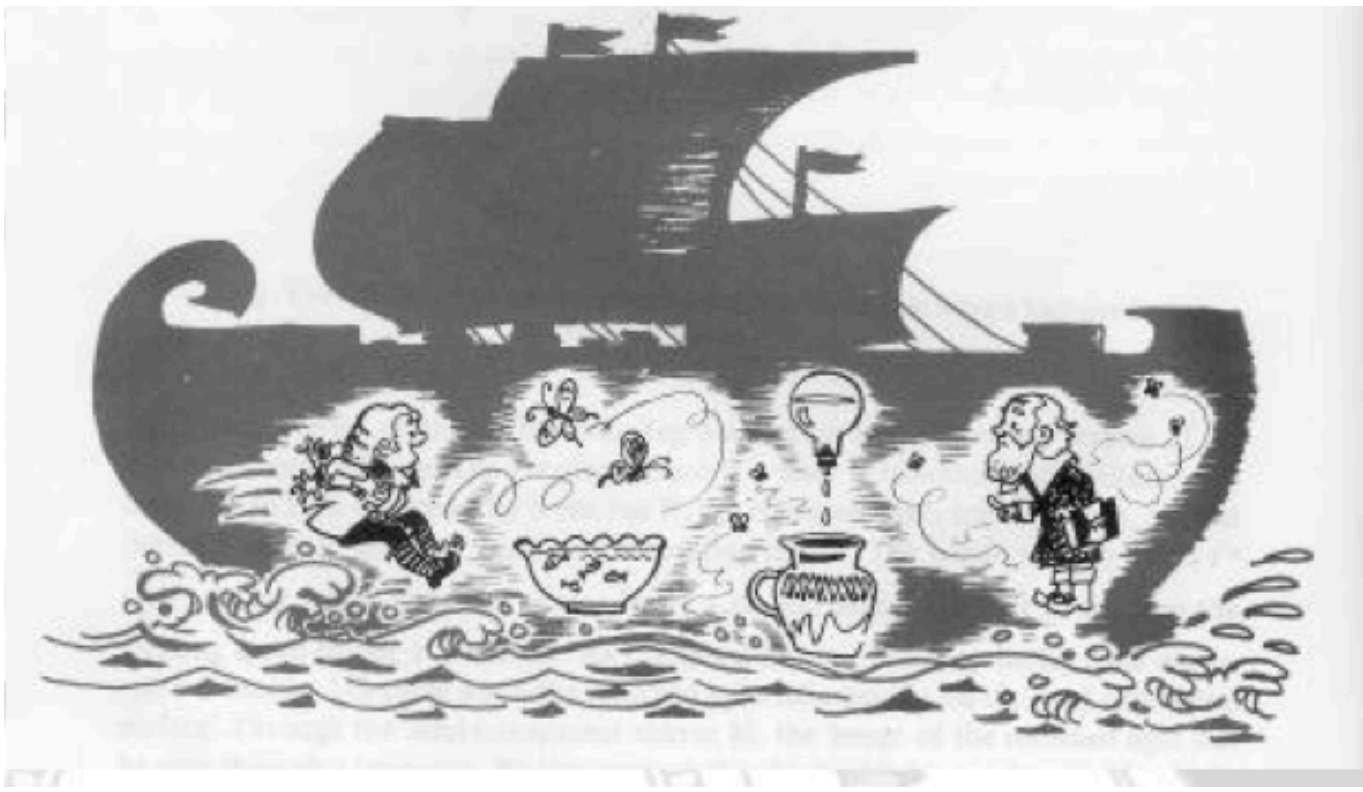
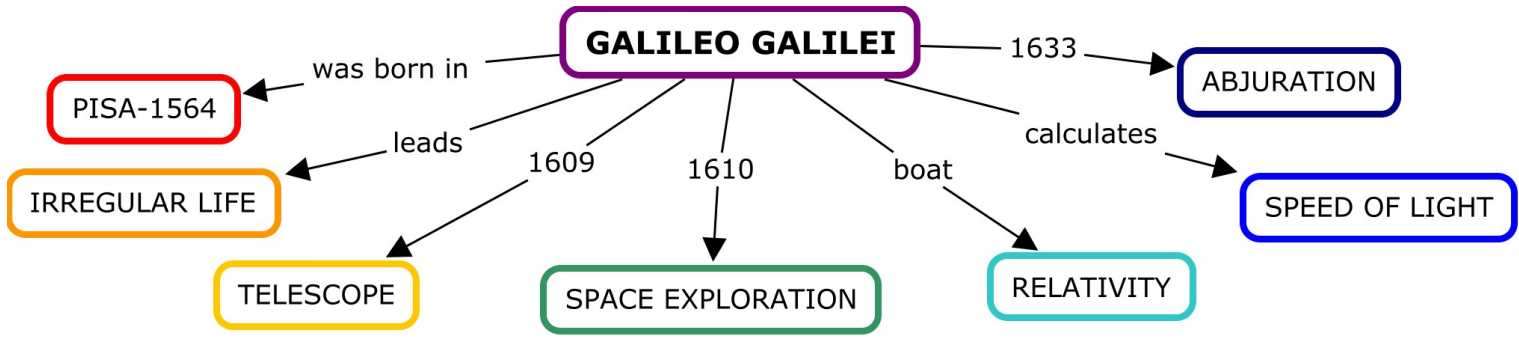
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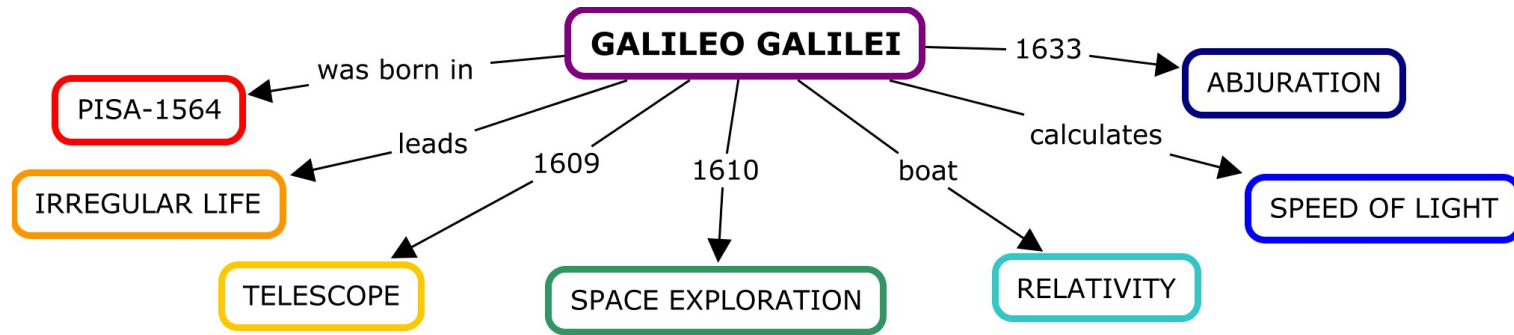


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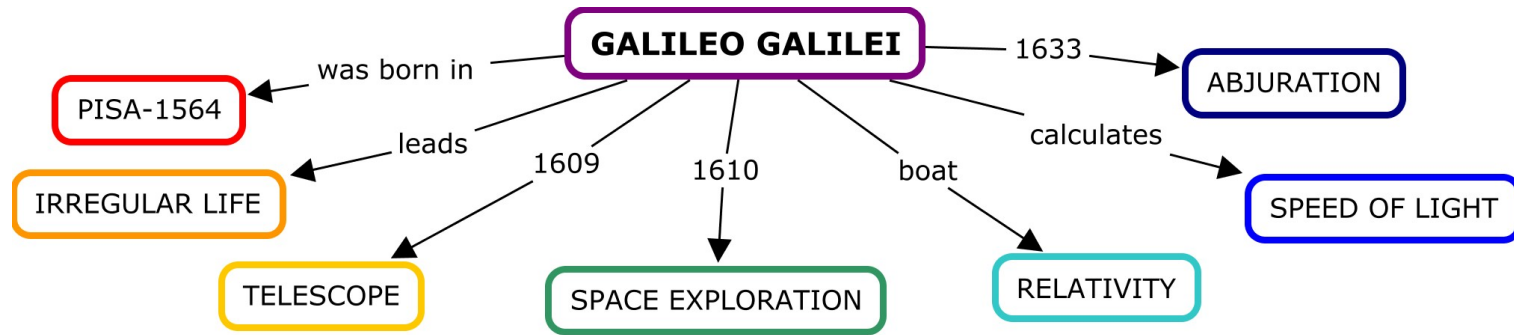
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“Riserratevi con qualche amico nella maggiore stanza che sia sotto coverta di alcun gran navilio, e quivi fate d’aver mosche, farfalle e simili animalletti volanti; siavi anco un gran vaso d’acqua, e dentrovi de’ pescetti; sospendasi anco in alto qualche secchiello, che a goccia a goccia vada versando dell’acqua in un altro vaso di angusta bocca, che sia posto a basso; e stando ferma la nave, osservate diligentemente come quelli animalletti volanti con pari velocità vanno verso tutte le parti della stanza; i pesci si vedranno andar notando indifferentemente per tutti i versi; le stille cadenti entreranno tutte nel vaso

sottoposto; e voi, gettando all’amico alcuna cosa, non più gagliardamente la dovrete gettare verso quella parte che verso questa, quando le lontananze sieno uguali; e saltando voi, come si dice, a piè giunti, eguali spazii passerete verso tutte le parti. ...fate muover la nave con quanta si voglia velocità; chè (pur che il moto sia uniforme e non fluttuante in qua e in là) voi non riconoscerete una minima mutazione in tutti li nominati effetti, nè da alcuno di quelli potrete comprender se la nave cammina oppure sta ferma”.

Galileo Galilei proposed this reasoning: imagine to be inside a boat. In this way there is no reference to the outside world and suppose that the boat is quite. Now imagine to make some observations, for example to watch a drop falling in a bucket, or to throw a ball to our friend: the drop would fall directly in the bucket and the ball would arrive directly to our friend. Now imagine to be on the deck of the boat, we would be able to pay attention to means on which we are moving on. If we try to do the same observation, we will have the same result.



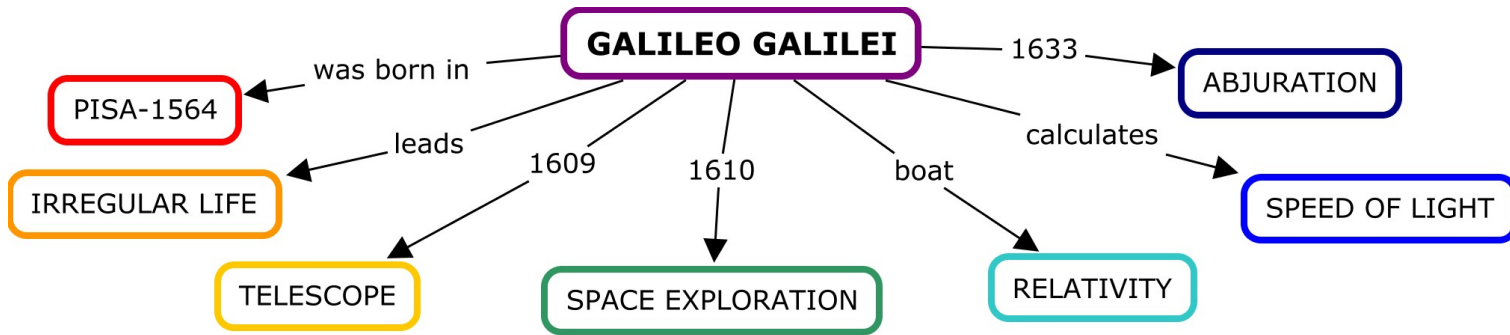
“Il moto in tanto è moto e come moto opera, in quanto ha relazione a cose che di esso mancano ; ma tra le cose che tutte ne partecipano ugualmente niente opera ed è come s’e non fusse [...]”

(Galileo, Dialogo sui massimi sistemi, opera citata, p. 148)

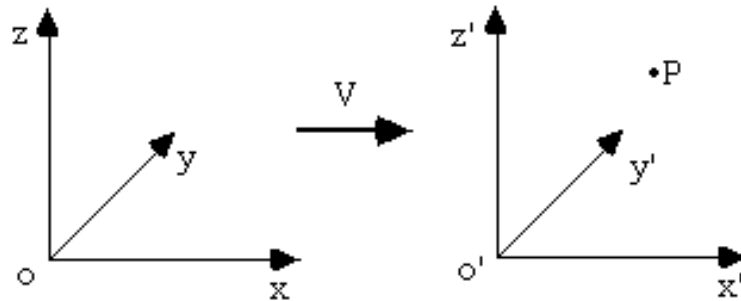
Relativity:

- Description of the same phenomenon from different points of view, which could appear with different characteristics to two different watchers using a different coordinate system.
- Only an external point of view to the Earth’s one is capable to affirm that Earth is revolving

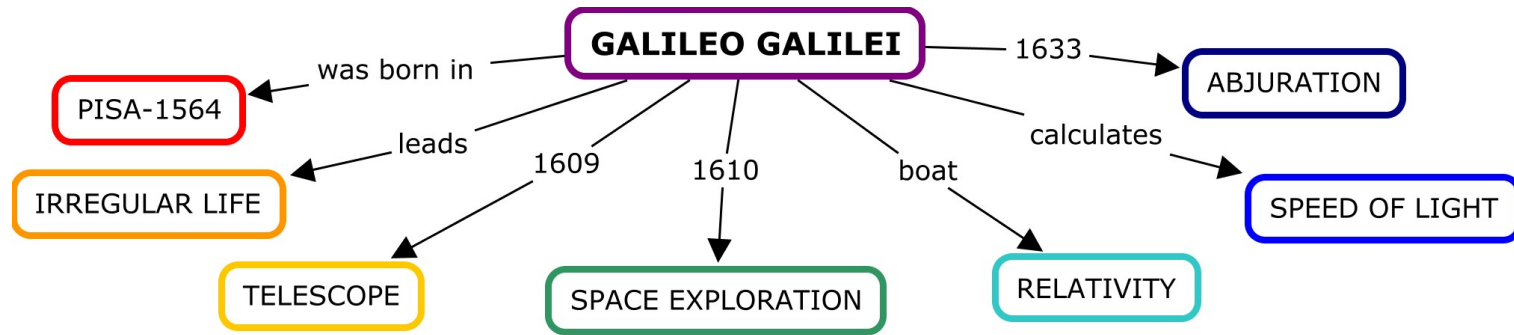




The speed of a point particle is a value that it is always relatively determined by a prefixed coordinate system.



The speed of the point P among the two systems are linked to the simple formula: $v=v_1+v$



SPEED OF LIGHT

Experiment:

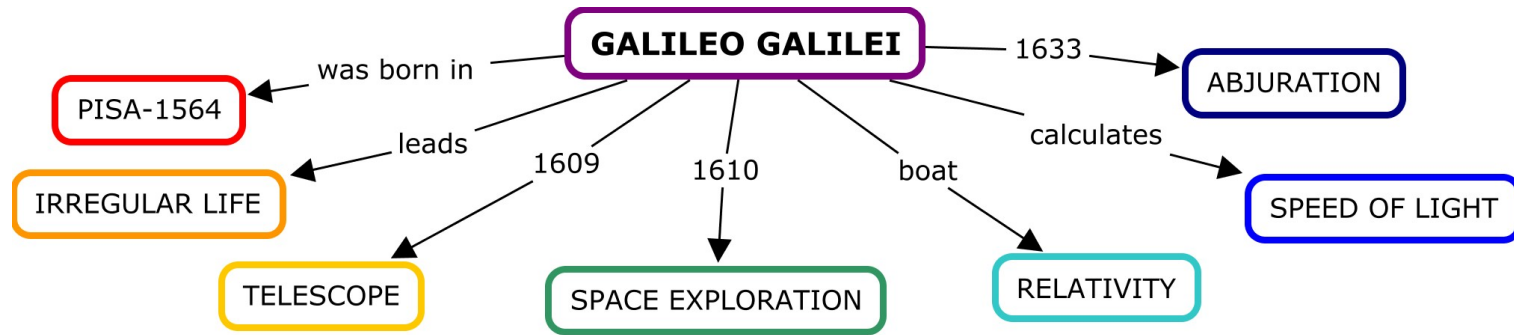
- two people are on two different hills, 1,5 km far from each other
- each one has a lantern with a drape
- the first one uncovers the other lantern and he casts a signal, the second sends a return signal.

If we know the distance and measure the time, hypothetically it could be possible to size up the light's speed.

Unsuccessful attempt:

The light takes just the hundredth part of a millisecond to cover the distance of 3 km: too short time to be calculated.



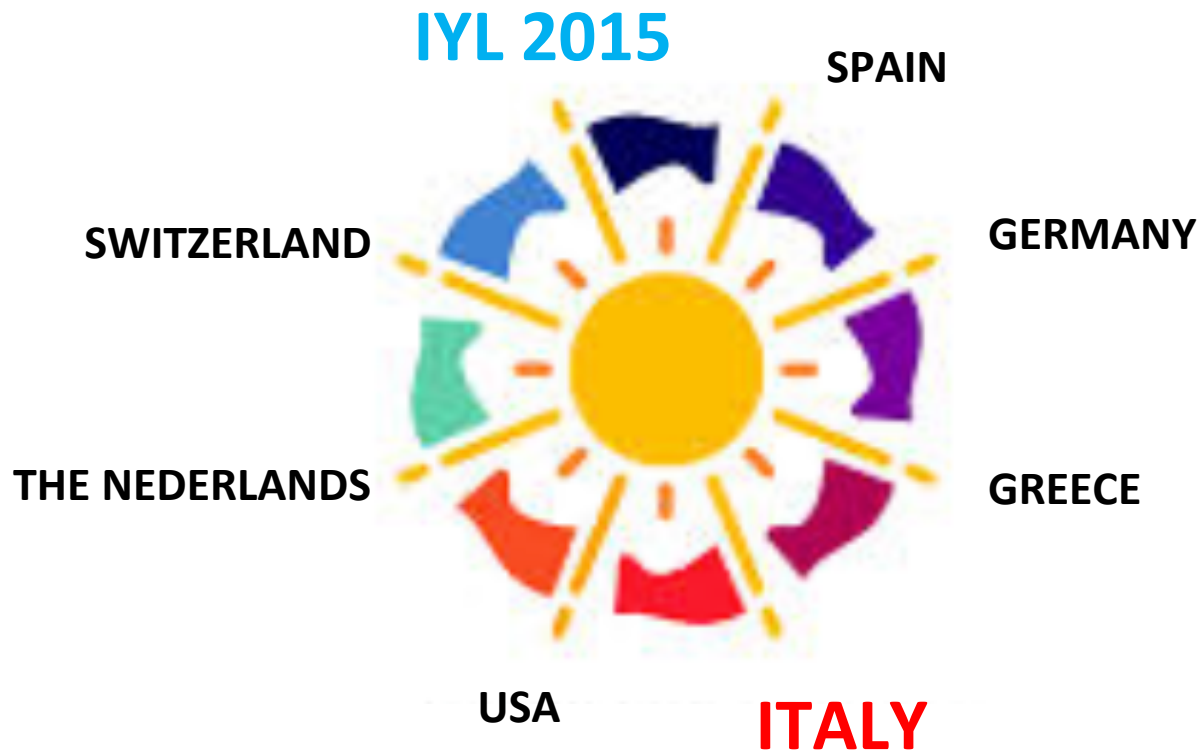


ABJURATION

Accused of heresy for the belief that the sun *is the immobile centre of the Solar System, that Earth is not in the centre and revolves*, he was forced to abjure on the 22nd of June 1633.

In 1638, completely blind, in a letter to a friend, he writes *“In my darkness I can’t quiet my disquiet brain”*.

1992 – In a speech of the 31st October Giovanni Paolo II closed the “Galileo affair” defining it *“a tragic, mutual misunderstanding”* and he admitted the Church’s fault. In fact, the Church recognises the legal autonomy of the research of science, and intends to settle old issues honestly and loyally.



New Light with Old Ideas